

What is claimed is:

- 1 1. An optical debris analysis fixture for obtaining a precise focus point for imaging  
2 debris passing through an optical flow cell, comprising:  
3 a plate having a plurality of component pin openings, wherein at least one set  
4 of said plurality of component pin openings are plate slots; and  
5 a plurality of components detachably mounted to said plate, each of said  
6 plurality of components having at least two registration pins that fit into said plurality  
7 of component pin openings, wherein one of said plurality of components carries the  
8 optical flow cell, and wherein one of said plurality of component's pins are slidably  
9 moveable in said slots to allow precise positioning of said one component with  
10 respect to the other of said plurality of components.
- 1 2. The fixture according to claim 1, further comprising:  
2 a pair of nudgers, said nudgers disposed on opposed sides of said one  
3 component, wherein said nudgers are detachably mounted to said plate and wherein  
4 said pair of nudgers slidably move said one component to a position within  $\pm 20$   
5 microns with respect to the other of said components.
- 1 3. The fixture according to claim 1, wherein said plurality of components comprise:  
2 a camera mount for carrying a camera;  
3 a lens holder assembly for supporting a lens extending from said camera mount;  
4 and  
5 an illuminator assembly which carries the optical flow cell.
- 1 4. The fixture according to claim 3, further comprising:  
2 a pair of nudgers disposed on opposite sides of said illuminator assembly,  
3 wherein said nudgers are detachably mounted to said plate and wherein said pair of  
4 nudgers slidably move said one component to a position within  $\pm 20$  microns with  
5 respect to at least said camera mount.

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- 1 5. The fixture according to claim 4, further comprising:  
2 a light source carried by said plate for directing light through one side of said  
3 illuminator assembly and the optical flow cell for observation by the camera carried  
4 by said camera mount.
- 1 6. The fixture according to claim 5, wherein said illuminator assembly comprises:  
2 a block;  
3 a pair of flanges extending from opposite sides of said block, each said flange  
4 having a flange slot therethrough;  
5 a pair of block pins extending downwardly from said block, said block pins  
6 receivable in said plate slots, wherein said block is slidable upon said plate by said  
7 pair of nudgers and wherein said flange slots receive fasteners that secure said block  
8 to said plate when said block is put into position.
- 1 7. The fixture according to claim 6, wherein said block has a flow cell housing slot and  
2 a flow cell flange slot both of which receive the optical flow cell, said illuminator  
3 assembly further comprising:  
4 a hinged door for detachably securing the optical flow cell in the flow cell  
5 housing and flange slots.
- 1 8. The fixture according to claim 7, wherein said flow cell flange slot has a groove on  
2 both sides thereof.
- 1 9. The fixture according to claim 1, wherein said at least two registration pins for each  
2 of said plurality of components and said plurality of component pin openings that  
3 receive said registration pins are aligned lengthwise along said plate.
- 1 10. A fixture for imaging particles passing through an optical flow cell, comprising:  
2 a plate having a plurality of component pin openings and a plurality of mount  
3 holes;  
4 a camera mount assembly having a pair of registration pins receivable in a first  
5 pair of said plurality of component pin openings, said camera mount having a pair of

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base holes alignable with a first pair of said mount holes for receiving fasteners to secure said camera mount assembly to said plate; and

an illuminator assembly having a pair of registration pins receivable in a second pair of said plurality of component pin openings which are in the form of slots, said illuminator assembly having a set of flange slots alignable with a second pair of said mount holes for receiving fasteners to secure said illuminator assembly to said plate.

11. The fixture according to claim 10, further comprising:

a pair of nudgers positioned on opposite sides of said illuminator assembly, each said nudger having a rail having a slide slot therethrough, and a head extending from said rail, each head having an adjuster moveable with respect to said head, said slide slots receiving fasteners receivable in a third pair of mount hole to secure said nudger to said plate, said adjusters moving said illuminator to a desired position prior to securing of said illuminator assembly to said plate.

12. The fixture according to claim 10, wherein said illuminator assembly has a hinged door that captures the optical flow cell.

13. The fixture according to claim 10, further comprising:

a lens extending from said camera mount.

14. The fixture according to claim 13, further comprising:

a lens holder assembly positioned between said camera mount and said illuminator assembly, said lens holder having a pair of holder registration pins receivable in a third pair of said plurality of component pin openings, said lens holder assembly having a pair of block holes alignable with a fourth set of mount holes for receiving fasteners to secure said lens holder assembly to said plate.

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